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RESEARCH ARTICLE

CONTRIBUTION OF CHARACTERISTICS ASSOCIATED WITH CEMENTO-OSSEOUS DYSPLASIAS FOR THE DIFFERENTIAL DIAGNOSIS WITH OTHER MORE INVASIVE PATHOLOGIES

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ABSTRACT

Most fibro-osseous lesions are radiographic findings observed as radiopaque and radiolucent images, usually asymptomatic. **Objective:** To study the contribution of radiographic characteristics associated with cemento-osseous dysplasias to the differential diagnosis with other more severe and invasive pathologies. **Materials and Methods:** In this study, 254 radiopaque and radiolucent images were analyzed, detected in orthopantomographies, performed in the first consultation, compatible with cemento-osseous dysplasias. Results: Lesions with irregularly shaped edges present a significantly higher proportion when associated with teeth. As the size of the lesions increases, the likelihood that their shape is irregular increases. **Conclusions:** The similarity of these pathologies with other lesions imposes the need to make a differential diagnosis taking into account the clinical history, radiographic and histological characteristics of these lesions for a correct treatment and monitoring of the patient. Clinical relevance: It is essential that the dentist is familiar with the diagnosis of these lesions found on routine radiographs, for a correct therapeutic approach.

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INTRODUCTION

Fibro-osseous lesions originate in a process in which bone is replaced by fibrous tissue with newly formed mineralized materials. (Kutluay, 2013; Eskandarloo, 2013; Mortazavi, 2015; Chennoju, 2016) They include developmental defects (hamartomas), reaction or dysplastic processes, and neoplasms. (Akbulut, 2015) The most common found in the maxillary bones are fibrous dysplasias, ossifying fibroma and cemento-osseous dysplasias (Kutluay *et al.,* 2013). Fibrous dysplasia is identical to a tumor, as bone substitution occurs for an increased proliferation of cellular fibrous connective tissue mixed with irregular bone trabeculae (Neville, 2009). In 1992 the World Health Organization adopted the concept of cementum dysplasia and in 2005 described three clinical presentations: periapical cement-bone dysplasia, focal cement-bone dysplasia and florid cement-bone dysplasia (Kutluay Koklu *et al.,* 2013; Eskandarloo, 2013; Mortazavi, 2015) This classification is based on age, sex, histopathology, radiographic and clinical characteristics (Kutluay Koklu, 2013) The images radiopaque / radiolucent cells that appear in dental support areas (Eskandarloo, 2013), can be simple radiographic findings if they do not show clinical signs and symptoms (Kutluay, 2013; Eskandarloo, 2013) however, it is necessary to make a differential diagnosis that includes: cemento-osseous dysplasias, focal sclerosing osteomyelitis, idiopathic osteosclerosis and benign and malignant intraosseous tumors. For this reason, the periodic monitoring of these patients, which includes radiographic examinations, conventional x-ray and CBCT Scan, in addition to the face-to-face clinical examination. Periapical cemento-osseous dysplasia is associated with the apex of the tooth (Alsufyani, 2011), has a preference for the anterior zone of the mandible (Kutluay Koklu, 2013; Mortazavi, 2015) and covers only a few adjacent teeth (Eskandarloo, 2015). It may be unitary, but multiple foci may appear (Krishnan, 2015) Generally, it prevails in patients over 30 years of age and with a female predilection. (Kutluay Koklu, 2013; Mortazavi, 2015) The incidence in the population is 2-3 / 1000 (1), its ethnic distribution being 59% in the black race, 37% in Asians (Japanese, Chinese and Koreans) and 3% in Caucasians (including Indians) (Eskandarloo, 2015).

Focal cemento-osseous dysplasia occurs in a single location, is the most frequent and appears in the posterior sectors of the mandible (Kutluay Koklu, 2013; Eskandarloo, 2013; Krishnan, 2015) The predilection for the third to sixth decade and for the Caucasian race is proven (in contrast to the periapical and florida) (Krishnan, 2015) The lesion is usually asymptomatic and smaller than 1.5 cm in diameter (Krishnan, 2014).

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Florid cemento-osseous dysplasia is broader and appears bilaterally in the mandible or maxilla and mandible (multifocal) (Eskandarloo, 2013). It is more common in middle-aged black women (Alsufyani, 2011; Gunduz, 2009) This dysplasia causes a pattern of autosomal dominant inheritance, which may have a family pattern (Kutluay Koklu, 2013), however there are few cases in the literature whose family pattern has been proven (Gunduz, 2009) The symptoms that occurred, (persistent low-intensity pain and alveolar fistula with yellowish avascular bone sequestration exposure) (7, 9), are related to the decrease in vascularization of the affected bone. The pressure caused by a prosthesis or the extractions, aggravate the situation. Endodontic treatment without a definitive diagnosis is not recommended, especially when it is based only on radiographs without signs or symptoms. (10)
It is essential to carry out a correct differential diagnosis for the treatment to be the most appropriate.

MATERIALS AND METHODS

Of the 7364 clinical files analyzed from patients at the Clinic of the Faculty of Dental Medicine of the University of Porto, 254 radiographic exams (periapical radiographs and computed tomography or scans) were selected that presented radiopaque or radiolucent lesions compatible with cement-bone dysplasias. From these radiographs, the necessary data for the preparation of the study were collected: lesion shape, lesion location, lesion radiopacity, bone cortical reaching, association with dental pieces and invasion of anatomical structures. In addition to these data, the age and gender of the patients whose radiographic exams showed these lesions were collected from the clinical file to assess the prevalence of the lesion according to gender and age. These data were gathered in order to find a relationship between the shape of the lesion (regular or irregular) and other characteristics of the same, such as its location (by anterior or posterior area of the quadrants), radiopacity (radiopaque, radiolucent or radiopaque and radiolucent) , maxillary and mandibular cortical bone injuries, association of the lesion with dental pieces and invasion of anatomical structures by the injury. This relationship will allow the dentist, when he finds a lesion with an irregular shape with these characteristics, to go for a differential diagnosis.

RESULTS

From the sample of 264 lesions analyzed, the average age of patients with lesions is 40 years old, ranging from a minimum of 19 to a maximum of 84 years, with the majority of the age group being 31-40 years old (33.1%) (Table 1). The majority belong to the female gender (60.6%) and to the age group 31-40 years (33.1%). Observing the lesions, we can identify that the majority are located in the posterior zone of the mandible (79.5%) and radiographically are radiopaque (83.5%). It was also analyzed that the majority of the studied lesions do not reach the cortical bone (91.3%) nor invade anatomical structures (98.8%). We can also verify that there is no great variance between injuries associated with teeth (44.9%) or without association (55.1%). Regarding the shape of the studied lesions, we observed that 62.6% of them have radiographically irregularly shaped edges and most of them are less than 1 cm in diameter (58.3%). Lesions with irregularly shaped edges present a significantly higher proportion when associated with teeth (49.1% vs 37.9%, Fisher's test, p = .091) (table 2).

Table 1- sociodemographic characteristics

	N	%
Genre		
Male	100	39.4
Female	154	60.6
Age (M;SD)	40.4	14.9
Up to 30 years	84	33.1
31-40	59	23.1
41-50	51	20.1
51-60	26	10.2
61-70	21	8.3
> 70	13	5.1

Table 2. Relationship between the shape of the lesion and other characteristics

	Regular		Irregular	
	N	%	N	%
Genre				
Male	39	[illegible]	61	38.4
Female	56	58.9	98	61.6
Age (M;SD)	39.7	14.1	40.8	15.2
Size (M;SD)	3.0	4.8	10.3	4.8
Location				
Anterior maxilla	1	[illegible]		
Posterior maxilla			2	[illegible]
Anterior mandible	17	17.9	25	15.7
Posterior mandible	73	76.8	129	81.1
Anterior posterior mandible	4	4.2	3	1.9
Radiopacity				
Radiolucent	16	16.8	30	18.9
Radiopaque	78	82.1	134	84.3
Radiopaque/radiolucent	7	7.4	5	
Cortical reaching				
No	88	92.6	144	90.6
Yes	7	7.4	15	9.4
Teeth association				
No	59	62.1	81	50.9
Yes	36	37.9	78	49.1
Invasion structures				
No	93	100.0	156	98.1
Yes			3	1.9

The size of the lesion proved to be a significant predictor of the shape of the lesion (B = .082, p = .013). As the regression coefficient is positive, this means that as the size of the lesions increases, the probability that their shape is irregular increases.

DISCUSSION

As described in the literature (Kutluay Koklu, 2013; Mortazavi, 2015), the injuries studied in the sample occurred mostly in female patients over 30 years old (66.9%). The literature reports that periapical cemento-osseous dysplasia has a preference for the anterior zone of the mandible (Mortazavi, 2015; Chennoju, 2016) while the rest prevails in the posterior zone, and covers only a few adjacent teeth (Akbulut, 2015). In our sample, 16.5% of the lesions appear in the anterior area of the mandible and 79.5% in the posterior area, as would be expected since most cemento-osseous dysplasias occur in the posterior area of the mandible. This dysplasia can be found in three phases: first or osteolytic phase where circular or elliptical reabsorption zones are visible (in this phase it is not possible to distinguish it from periapical granuloma or periapical cyst) (Neville, 2009); in the second or cementoblastic phase, a mixture of radiolucent and radiopaque zones with small calcifications is visible; in the final or mature phase, only a completely radiopaque zone is visible (Eskandarloo, 2013; Mortazavi, 2015; Chennoju, 2016).

In our sample, we observed several radiopaque lesions compatible with late periapical cemento-osseous dysplasias, possibly due to the average age present in our sample being more advanced. Single lesions almost never exceed 1 cm in diameter (Neville, 2009), as was observed in our sample, and most lesions are less than 1 cm.

When the images do not exceed this size, treatment is not necessary, except if there are symptoms or if the image increases over time, as its development and maturation are self-limited, and it is only advisable to watch with frequent radiographic examinations (Eskandarloo, 2013) Growth progressive rarely occurs and usually does not expand the cortex (Neville, 2009). In our sample, few lesions reached the cortical bone, only 8.7% of the injuries, a value that is expected by observing the characteristics of the cemento-osseous dysplasias described. However, this destruction of the cortical plates has already been reported (Krishnan, 2015), and its location and expansion is easily identified with axial images of the CBCT scan (Eskandarloo, 2015).

Focal cemento-osseous dysplasia is the most frequent and affects mostly the posterior sectors of the mandible. (3, 5, 6, 8), is asymptomatic and smaller than 1.5 cm in diameter. (6, 8, 9) In the studied sample only 14.6% of the lesions exceeded 1.5 cm in diameter and 27.2% of the lesions measure between 1 cm and 1.5 cm. This lesion has 3 stages of maturation: early (well-defined radiolucency); intermediate (radiolucent-radiopaque with well-defined radiolucent halo) and late (radiopaque with poorly defined periphery). (3, 8) Lesions in a later stage have diffuse radiopacity with ill-defined edges and a higher proportion of anastomosed, curvilinear and slightly bony trabeculae. (the so-called "ginger root" pattern). (8) In our sample, 83.5% of the lesions are radiopaque and may be mature periapical cemento-osseous dysplasias, 11.8% radiolucent possibly early focal cemento-osseous dysplasias and 4.7% radiopaque and radiolucent being included in cementoblastic or intermediate focal periapical cement-bone dysplasias. The differential diagnosis should include, in the stage of development of the lesion, granuloma or periapical cyst and chronic osteomyelitis in the osteolytic stage (Cankaya, 2012). In the mixed and radiopaque stages, it should include flowery or periapical cemento-osseous dysplasia, chronic sclerosing osteomyelitis, ossifying fibroma, osteoblastoma and ameloblastoma (Cankaya, 2012) It can be difficult to differentiate focal dysplasia from ossifying fibroma, the result of an anatomo-pathological study being fundamental for this diagnosis (Neville, 2009).

Florid cemento-osseous dysplasia is broader and appears bilaterally in the mandible or maxilla and mandible (multifocal) (Akbulut, 2015). Dense and lobulated masses are radiographically visible, often symmetrically located in several regions of the jaws (Gunduz, 2009). The diagnosis differential should include sclerosing osteomyelitis, which appears to be a simple but defined opaque portion in the mandible, in contrast to florid dysplasia which presents several round or lobulated opaque masses (chronic diffuse sclerosing osteomyelitis appears in the body of the alveolar mandible to the lower margin and can reach the branch) (Kutluay Koklu, 2013) Given the radiographic characteristics of this dysplasia, we did not find any bilateral lesions in our sample, so we believe that the studied lesions are of the periapical and focal type given their location, dimension and radiographic aspect.

Conclusion

Most of the lesions found are in accordance with the literature, however a large number of lesions with irregular edges were observed (62.6%) that attract the attention of the dentist during the consultation. We conclude that these lesions with irregular edges are more prevalent in the posterior area of the mandible with a radiopaque aspect and may be associated with dental pieces. The similarity of these pathologies with other lesions imposes the need to make a differential diagnosis taking into account the clinical history, radiographic and histological characteristics of these lesions for a correct treatment and monitoring of the patient. For this, it is essential that the dentist is familiar with the characteristics of these lesions.

Compliance with Ethical Standards

Conflict of Interest: Author Cristina Fonte declares that she has no conflict of interest. Author Filipe Coimbra declares that he has no conflict of interest.

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REFERENCES

Akbulut S, Demir MG, Basak K, Paksoy M. 2015. Maxillectomy for Cementifying Osseous Dysplasia of the Maxilla: A Case Report. Acta Medica (Hradec Kralove). 2015;58(1):32-4. Doi: 10.14712/18059694.89

Alsufyani NA, Lam EW. 2011. Osseous (cemento-osseous) dysplasia of the jaws: clinical and radiographic analysis. J Can Dent Assoc.77:b70.

Cankaya AB, Erdem MA, Olgac V, Firat DR. 2012. Focal cemento-osseous dysplasia of mandible. BMJ Case Rep. 2012; Doi: 10.1136/bcr-2012-006432

Chennoju SK, Pachigolla R, Govada VM, Alapati S, Balla S. 2016. Idiosyncratic Presentation of Cemento-Osseous Dysplasia - An in Depth Analysis Using Cone Beam Computed Tomography. *J Clin Diagn Res.*, 10(5):ZD08-10. Doi: 10.7860/JCDR/2016/16821.7839

Eskandarloo A, Yousefi F. 2013. CBCT findings of periapical cemento-osseous dysplasia: *A case report. Imaging Sci Dent.*, 43(3):215-8. Doi: 10.5624/isd.2013.43.3.215

Gunduz K, Avsever H, Karacayli U, Senel B, Piskin B. 2009. Florid cemento-osseous dysplasia: a case report. *Braz Dent J.* 20(4):347-50.Doi: 10.1590/s0103-6440200 9000 400015

Krishnan U, Al Maslamani M, Moule AJ. 2015. Cone beam CT as an aid to diagnosing mixed radiopaque radiolucent lesions in the mandibular incisor region. BMJ Case Rep. 2015. Doi: 10.1136/bcr-2014-207617

Kutluay Koklu H, Cankal DA, Bozkaya S, Ergun G, Bar E. 2013. Florid cemento-osseous dysplasia: Report of a case documented with clinical, radiographic, biochemical and histological findings. *J Clin Exp Dent.*, 5(1):e58-61. Doi: 10.4317/jced.50854

Mortazavi H, Baharvand M, Rahmani S, Jafari S, Parvaei P. 2015. Radiolucent rim as a possible diagnostic aid for differentiating jaw lesions. *Imaging Sci Dent.*, 45(4):253-61. Doi: 10.5624/isd.2015.45.4.253

Neville BW, Damm DD, Allen CM, Bouquot JE. 2009. Oral & maxillofacial pathology. 3th ed ed. St. Louis: Saunders Elsevier; XVI, 968 p.

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